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| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/091,216 | STEENBERGEN ET AL. | |
| | Examiner | Art Unit | |
| | John D. Lee | 2874 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment submitted on February 3, 2004.
2. ☒ The allowed claim(s) is/are 1-3 and 5-24.
3. ☒ The drawings filed on 11 June 2002 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

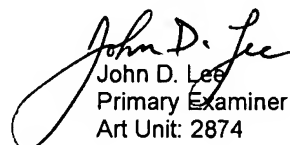
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |


 John D. Lee
 Primary Examiner
 Art Unit: 2874

EXAMINER'S AMENDMENT

An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Claim 21 is amended as follows:

21. (twice amended) The optical coupler according to claim 20, wherein centre lines of at least some of the gaps between the waveguides in a coupling region follow the lines of a Gaussian field in accordance with equations E1 as follows:

$$w(z) = w_k \sqrt{1 + (\alpha z)^2} ; \alpha = (\lambda / n_{\text{eff}}) / (\pi w_0^2) ; R = z \{1 + [1 / \alpha z]^2\}$$

where z is the longitudinal propagation position; $w(z)$ is the z -dependent lateral position of the central line of the k^{th} gap; w_k is the position of the centre of the k^{th} gap at $z=0$; w_0 is the beam waist at $z=0$; λ is the wavelength in vacuum, [and] n_{eff} is the effective index; and R is the radius of curvature of the phase front.

The above changes restore the last two (2) lines of claim 21 to their original state, the change made by the amendment of February 3, 2004, having removed explanatory language that should not actually have been removed. This is a necessary grammatical change that does not require consultation with applicant or applicant's representative (MPEP § 1302.04).

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

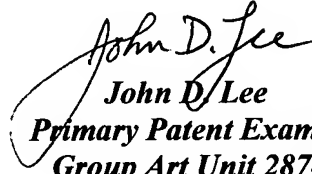
The following is an Examiner's Statement of Reasons for Allowance: After extensive searching by the Examiner, the previously cited references to Tanaka et al, Rasmussen et al, Arie et al, and Okuda et al are considered to be the closest prior art known. After careful study by the Examiner, it is agreed that none of these prior art documents discloses or suggests an optical coupler having the limitation newly inserted into independent claim 1 ("wherein at least some of the waveguides in the coupling region comprise a section having a width that is less than a predetermined critical width of the waveguide at a predetermined wavelength at which the coupler is designed to operate"). The Examiner agrees with applicant's remarks relating to the above-identified references and this particular claim limitation, such remarks being found in the amendment submitted on February 3, 2004. With the closest known prior art thus having been overcome, and with the previous objections to the disclosure, as well as the previous 35 U.S.C. § 112 claim problems, having been obviated by applicant's response, this application is now allowable. Claims 1-3 and 5-24 are therefore allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (571) 272-2351. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a

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general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562, to the technical support staff supervisor (Team **B**) at telephone number (571) 272-1564, or to the Technology Center 2800 Customer Service Office at telephone number (571) 272-1626.


John D. Lee
Primary Patent Examiner
Group Art Unit 2874